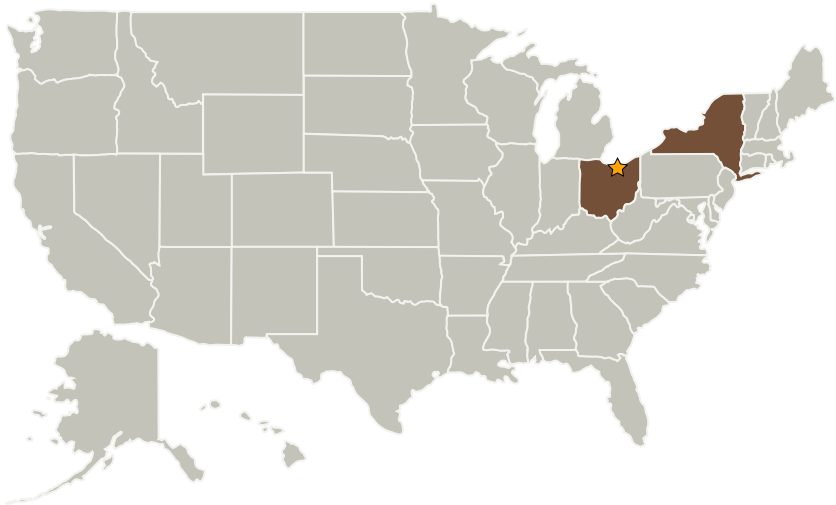
Radiosonde-Borne Cloud Assessment System, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

Significant improvements in existing technologies for icing weather information systems are required to increase the level of safety for all aircraft flying in the atmospheric icing environment. Innovative Dynamics, Inc. proposes to develop a cloud properties sensor for providing warning of hazardous airborne icing conditions. The proposed innovation is a new capability for measuring cloud properties that would consist of a small expendable radiosonde-borne optical probe. This cloud property information is currently obtained by launching an aircraft or positioning a satellite to the desired location, which makes it difficult obtain this information economically. New low cost commercially available semiconductor lasers, developed for the fiber optic communication industry, allows this innovation to be possible. The sensor would measure liquid water content, mean drop size, and droplet phase using a low-power infrared laser based sensor system. These parameters would be used to identify certain cloud conditions that pose airborne icing hazards to aircraft. Current low cost expendable radiosondes provide altitude, location, temperature, and atmospheric pressure information, but not water content information that indicate aircraft icing potential. This cloud property information is crucial to aircraft operating at altitudes, as well as important in weather forecasting models. Phase I will develop the sensing technique for cloud icing potential. Phase II will integrate this technology with a current weather radiosonde for complete atmospheric profiling.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Innovative Dynamics, Inc.	Supporting Organization	Industry	Ithaca, New York

Primary U.S. Work Locations	
New York	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.11 Engine Icing